**Thursday, March 18, 1999**
**POSTER SESSION II**
**7:00 p.m. UHCL**

## Mars: General Science

Musselwhite D. S. Drake M. J.
*Early Outgassing of Mars: A Quantitative Assessment* **[#1541]**
We assess quantitatively the timing and extent of outgassing that can produce the $^{129}Xe/^{132}Xe$ ratio and total $^{132}Xe$ abundance in the present-day Mars atmosphere. A model with two stages of outgassing with atmospheric removal occurring before the 2nd stage is employed.

Durand-Manterola H. J. Perez-de-Tejada H.
*Theoretical Model of Evolution of the Martian Atmosphere* **[#1010]**
Our model examines the evolution of the Mars atmosphere by including processes related to the lost of mass to space, the oxidation of the planetary surface and degassing. The model depicts time variations of the atmospheric mass, pressure, and temperature.

Bass D. S. Siili T.
*Downslope Windstorm Effects and Raising Dust in Hellas Basin* **[#1058]**
We present observational evidence of dust storm activity in Hellas basin that supports the suggestion that slope angle has an effect on wind speed and subsequent atmospheric dust loading.

Cohen J. L. Treiman A. H.
*The Longitudinal Extent of a Layered Sequence in the Sub-Surface of Mars: Evidence for Diagenesis in the Hesperian* **[#1254]**
Horizontal rock layers are visible at wall tops throughout Valles Marineris, Mars. Similar layers are exposed by impact craters in the whole equatorial region, except under the Tharsis. So, these layers reflect a global process of rock formation.

Mellon M. T.
*Martian Orbital Change and Its Effect on the Formation of Permafrost Polygons* **[#1118]**
Small-scale polygonal patterns have been observed on Mars and may have been formed by thermal contraction in ice-cemented permafrost. The seasonal tensile stress in martian permafrost is calculated at various climatic conditions to evaluate polygon formation.

Harrison K. P. Grimm R. E.
*A Conservative Approach to Hydrothermal Systems on Mars* **[#1941]**
Hydrothermal systems on Mars may have produced sufficient surface discharge to contribute to the formation of valley systems. A conservative approach to the study of groundwater mobilization and discharge due to hot magmatic bodies is presented.

Nicoll K. Komatsu G.
*Interpreting Martian Paleoclimates from Valley Network Morphologies: Insights from Terrestrial Analogues in Egypt* **[#1054]**
Wadi Mareef in S. Egypt, a paleovalley formed by spring-fed sapping and runoff processes, bears a striking resemblance to Nirgal Vallis. The concept of equifinality should apply to the modelling of martian landscape processes and paleoclimates.

Bourke M. C. Zimbelman J. R.
*Australian Paleoflood Systems: A New Earth Analogue for Martian Channels* **[#1804]**
Mapping and classification of Earth flood features, utilising TM and MSS imagery, enable a better understanding of land surface processes on Mars. Unconfined paleoflood channels and floodouts in arid central Australia provide a new perspective for studying martian channels.

Baliva A. Marinangeli L.

*Fan-shaped Features in Mangala Valles Region, Mars* **[#1764]**

A large variety of hydrologic patterns and interaction between sedimentary environments in Mangala Region allow the recognition of peculiar morphologies. We focused on the analysis of fan-shaped features outlining different sedimentary processes and environments.

Pranzini E. Zeoli A.

*Spiral Beaches on Mars: Evidence for a Long Lasting Liquid Ocean* **[#1178]**

Log-spiral significantly fit curvilinear ridges in the Cydonia Mensae region, just like occurs on equilibrium Earth beaches when offshore waves are diffracted by a headland and refracted by the sea-bottom. This proves the existence of an ancient liquid ocean on Mars.

Yen A. S. Murray B.

*A Dry Mars: Limited Chemical Weathering of Surface Deposits by Liquid Water* **[#1162]**

We present three sets of laboratory results that support the alternative viewpoint that liquid water never had significant chemical interactions with the surface that we see on Mars today.

Ramstad J. F.

*A Comparison of Fluidized Ejecta Impact Crater Morphology Between the Northern Lowlands and Southern Highlands of Mars* **[#1788]**

Fluidized ejecta craters are digitized and measured from high resolution imagery to determine if differences exist in the substrates of the northern lowlands and southern highlands.

Demura H. Kurita K.

*Formation of Fluidized Craters on Mars* **[#1630]**

The rampart crater, a kind of fluidized crater, is peculiar to Mars. A general view of formation of the fluidized craters is proposed on the basis of photogeological descriptions, classification, and photoclinometric survey.

Rosanova C. E. Lucchitta B. K. Hare T. M. Velasco M.

*Observations of Candor and Ophir Chasmata in Valles Marineris, Mars, Using Merged Topographic, Geologic and Image Data* **[#1287]**

Images of Ophir and Candor Chasmata were draped over topographic data to produce perspective views, anaglyphs, and layered data sets. The 3-D views help determine the sequence of events. Slope and volume information is being obtained.

Chapman M. G.

*Enigmatic Terrain of North Terra Meridiani, Mars* **[#1294]**

Scrutiny of Viking and MOC images, a thickness estimate, and TESS results lead to new hypotheses for the origin of enigmatic terrain of north Terra Meridiani, west Arabia Terra, Mars.

Chapman M. G.

*Elysium Basin Lava Flows: New Interpretations Based on MOC Data* **[#1279]**

MOC images of Elysium Basin are interpreted by members of the Science Team to suggest fluid lavas formed in lakes. Details presented here suggest that a textural difference between lava types may be a more practical interpretation of the platey lava texture.

Lias J. H. Tanaka K. L Hare T. M.

*Geologic, Tectonic, and Fluvial Histories of the Eridania Region of Mars* **[#1074]**

The objectives of this study were to: (1) construct a geologic/geomorphic map of the Eridania region, (2) determine potential causes for tectonic structures in the region, and (3) determine potential sources for fluvial channels in the region.

Hiesinger H. Head J. W. III

*Shorelines on Mars: Testing for Their Presence Using Mars Orbiter Laser Altimeter (MOLA) Data* **[#1370]**

MOLA data of the Deuteronilus Mensae area are used to test for the elevation of contacts interpreted to represent shorelines of an ancient northern ocean on Mars.

Franklin B. J.  Parker T. J.

*Geologic Maps of East Acidalia Planitia, Mars* **[#1785]**

Nine morphological units, 4 crater types and evidence of 3 shorelines are found in MTM Quads 45347, 45352, and 45357, Acidalia Planitia, Mars. We assess evidence for/against multiple shorelines.We await MOLA data as additional evidence regarding possible standing water.

McGill G. E.

*Evolution of the Dichotomy Boundary Zone, Arabia Terra, Mars* **[#1148]**

Mapping of 4 1:500K quadrangles (30-45N332) transecting the martian dichotomy boundary indicates that fretted channels and debris flows formed over finite intervals but at different times; thus the flow lobes do not necessarily imply that the channels formed by mass wasting.

Mege D.

*Surface Shortening at the Coprates Ridged Plain, Syria Planum Flood Basalt Province, Mars* **[#1876]**

Using a method developed in another paper, surface shortening is estimated at the Coprates ridged plain on Mars. Shortening is found to be 5.3–9.2% of the total 1.300,000 km² surface area, similar to estimates obtained at the Columbia Plateau on Earth.

Mege D.

*A Stress History Consistent with the Volcanic and Tectonic History of the Early Tharsis Flood Basalt Province on Mars* **[#2065]**

Based on comparison between early Tharsis evolution and evolution of terrestrial mantle plumes, a succession of logical and chronological relationships between stress and tectonic structures for the early stage of Tharsis evolution is proposed.

Hauber E.  Kronberg P.

*Differences in Style and Age of Extensional Faulting — Examples from the Northern Tharsis Province, Mars* **[#1568]**

High-resolution mapping in the Alba and Tempe/Mareotis regions reveals differences in orientation, geometry, kinematics, and age of faulting. Both zones are believed to be related to plume activity, crustal extension, and associated volcanism.

Scott E. D.  Wilson L.  Head J. W. III

*Episodicity of Magma Supply to the Large Tharsis Volcanoes, Mars: Thermal Considerations* **[#1356]**

The presence of discrete magma reservoirs at various times during the formation of Tharsis volcanoes can only be made consistent with thermal constraints if the magma supply from the mantle varies episodically in time.

Bowling S. P.

*Modelling the Effusion Rates and Activity Phases of the Elysium Volcanics* **[#1185]**

The Elysium Volcanics can be considered to have occurred in two phases — volcano construction and flood lava production. Comparison with terrestrial flood lavas allows effusion rates and activity phases to be modelled for the Elysium Volcanic province.

Mitchell K. L.  Wilson L.  Wilson C. J. N.

*Consequences of Adiabatic Cooling Within Volcanic Conduits on Earth and Mars* **[#1716]**

The consequences of adiabatic rather than isothermal cooling in volcanic conduits are assessed for Earth and Mars using a new computational numerical model.

Moore J. M.  Bullock M. A.

*Experimental Studies of Brines and Evaporites as Applied to Mars: Initial Results from the 1998–1999 Runs* **[#1922]**

This is the first ever report of results from our "full up," multi-variable, multi-control laboratory study of Mars brine chemistry. After two years of preparation, we now have results and analysis from the first few time-steps of the experiment.

Cooper C. D.  Mustard J. F.

*Sulfates on Mars:  Spectroscopic Evaluation of Analog Mixtures* **[#2042]**

Mixtures of sulfates and palagonite at levels comparable to martian soils have spectroscopic features in wavelength regions that should be detectable by TES. Cementation of the mixtures results in dramatic changes that should also be detectable.

Stooke P. J.

*Revised Viking 1 Landing Site* **[#1020]**

The position of the Viking 1 landing site in orbiter images has been revised to be consistent with Pathfinder and the new control network.  Several horizon features can be matched at the new location including parts of a wrinkle ridge on the eastern horizon.

Kirkland L. E.  Herr K. C.  McAfee J. M.  Salisbury J. W.  Forney P. B.

*1969 Mariner Mars IRS Thermal Infrared Spectra of the Dark Side of Mars* **[#1687]**

Thermal infrared spectra of the martian night side have advantages over day spectra for examining the aerosol dust mineralogy because they contain weaker atmospheric gas and surface features.  We will present and discuss IRS night spectra.